

Estimation of untracked geosynchronous population from short-arc angles-only observations

Authors: Liam M. Healy, Mark Matney

Abstract:

Telescope observations of the geosynchronous regime will observe two basic types of objects --- objects related to geosynchronous earth orbit (GEO) satellites, and objects in highly elliptical geosynchronous transfer orbits (GTO). Because telescopes only measure angular rates, the GTO can occasionally mimic the motion of GEO objects over short arcs. A GEO census based solely on short arc telescope observations may be affected by these ``interlopers". A census that includes multiple angular rates can get an accurate statistical estimate of the GTO population, and that then can be used to correct the estimate of the geosynchronous earth orbit population.